Hawley's CONDENSED CHEMICAL DICTIONARY

Eleventh Edition

Exhibit 2

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hydrolysis. A chemical reaction in which water reacts with another substance to form two or more new substances. This involves ionization of the water molecule as well as splitting of the compound hydrolyzed, e.g., $CH_3COOC_2H_5 + HOH \rightarrow CH_3COOH + C_2H_5OH$. Examples are conversion of starch to glucose by water in the presence of suitable catalysts; conversion of sucrose (cane sugar) to glucose and fructose by reaction with water in the presence of an enzyme or acid catalyst; conversion of natural fats into fatty acids and glycerol by reaction with water in one process of soap manufacture; and reaction of the ions of a dissolved salt to form various products, such as acids, complex ions, etc.

hydrometer. Device for measuring the density of liquids.
See also Baume'

hydronium ion. An ion (H_3O^+) formed by the transfer of a proton (hydrogen nucleus) from one molecule of water to another, a companion ion (OH^-) is also formed, the reaction is $2HOH \rightarrow H_3O^+ + OH^-$. Formation of such ions is statistically rare, resulting from the interaction of water molecules in a ratio of 1:556 million.

hydroperoxide. An organic peroxide having the generalized formula ROOH. An example is ethyl hydroperoxide (C_2H_5OOH). Methyl and ethyl hydroperoxides are unstable and thus are strong oxidizing agents and explosion hazards; those of higher molecular weight are more stable. Hydroperoxides can be derived by oxidation of saturated hydrocarbons, or by alkylating hydrogen peroxide in a strongly acidic environment. They are used as polymerization initiators.

hydrophilic. Having a strong tendency to bind or absorb water, which results in swelling and formation of reversible gels. This property is characteristic of carbohydrates, such as algin, vegetable gums, pectins and starches, and of complex proteins such as gelatin and collagen.

hydrophobic. Antagonistic to water, incapable of dissolving in water. This property is characteristic of all oils, fats, waxes, and many resins, as well as of finely divided powders like carbon black and magnesium carbonate.

hydroponics. See nutrient solution.

"Hydro-Pruf."[7300] TM for a silicone water repellent for fabrics. Applied with a catalyst at high curing temperatures.

hydroquinol. See hydroquinone.

hydroquinone. (quinol; hydroquinol; p-dihydroxybenzene). CAS: 123-31-9.
$C_6H_4(OH)_2$.
Properties: White crystals; soluble in water, alcohol, and ether; d 1.330; mp 170C; bp 285C; flash p 329F (165C); autoign temperature 960F (515.5C). Combustible.
Derivation: Aniline is oxidized to quinone by manganese dioxide and is then reduced to hydroquinone.
Grade: Technical, photographic.
Hazard: Toxic by ingestion and inhalation, irritant. TLV: 2 mg/m³ of air.
Use: Photographic developer (except color film); dye intermediate; inhibitor; stabilizer in paints and varnishes, motor fuels, and oils; antioxidant for fats and oils; inhibitor of polymerization.

hydroquinone benzyl ether. See p-benzyloxyphenol.

hydroquinone dibenzyl ether. CAS: 103-16-2.
$C_6H_5CH_2OC_6H_4OCH_2C_6H_5$.
Properties: Tan powder; mp 119C (min); purity 90% (min); insoluble in water; soluble in acetone, benzene, and chlorobenzene. Combustible.
Use: Solvent; perfumes, soap, plastics, and pharmaceuticals.

hydroquinone di-n-butyl ether. (1,4-dibutoxybenzene). $C_6H_4[O(CH_2)_3CH_3]_2$.
Properties: White flakes with no appreciable odor; mp 45–46C; bp 124C (1.3 mm), 158C (15.0 mm); insoluble in water; soluble in benzene, acetone, ethyl acetate, and alcohol. Combustible.

hydroquinone diethyl ether. (1,4-diethoxybenzene). $C_6H_4(OC_2H_5)_2$.
Properties: White granular solid with anise-like odor, mp 71–72C, bp 246C. Neither boiling caustic nor acid solution cause any hydrolysis. Absorbs UV light. Insoluble in water; soluble in benzene, acetone, ethyl acetate, and alcohol. Combustible.

hydroquinone di(β-hydroxyethyl) ether. (p-di-[2-hydroxyethoxy]benzene).
$C_6H_4(OC_2H_4OH)_2$.
Properties: White solid, mp 99C, bp 185–200C (0.3 mm), slightly soluble in water and most organic solvents, miscible with water at 80C. Combustible.
Use: Preparation of polyester, polyolefins, polyurethanes and hard waxy resins, organic synthesis.

hydroquinone dimethyl ether. (1,4-dimethoxybenzene; DMB; dimethyl hydroquinone).
CAS: 654-42-2. $C_6H_4(OCH_3)_2$.
Properties: White flakes with sweet clover odor, bp 213C, mp 56C, d 1.0293 (65C), viscosity 1.04